

## Heart Failure

### POTENTIAL IMPACT OF PREDICTIVE MODELS FOR EARLY DETECTION OF HEART FAILURE ON THE INITIATION OF EVIDENCE-BASED THERAPIES

ACC Moderated Poster Contributions  
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We previously showed that majority of primary care patients with clinical HF diagnosis had documentation of meeting Framingham criteria for HF at least 3 months prior to clinical diagnosis; with 20% meeting criteria at least 2 years prior. We sought to determine the extent to which sophisticated data & text mining tools could be used with EHR data to promote use of evidence based therapies for HF management, months to years prior to clinical diagnosis.

Incident HF cases (n=4644) from a large primary care practice were identified & stratified into 2 groups (Table 1). Absolute and relative change in use of outcome based (ACEI/ARBs, B-blockers) & symptomatic (loop diuretic & digoxin) HF therapies were evaluated within 180 days preceding & following the time at which a patient was identified as meeting Framingham criteria, & after being clinically diagnosed with HF.

Patients met Framingham criteria for HF diagnosis, a mean 708 days (median 612) prior to clinical diagnosis. After meeting Framingham criteria, absolute increase in use of ACEIs/ARBs was only 9.6% whereas following clinical diagnosis their use increased by 17.9%. Similar changes were seen for B-blockers. Loop diuretic use increased by 10.6% after criteria but by 36.6% after clinical diagnosis.

Applying automated text & data mining of EHRs for HF signs & symptoms has the potential to significantly improve care by informing physicians and triggering the earlier initiation of therapies proven to improve mortality & minimize HF symptoms & hospitalizations.

Medication usage documented within 6 months of achieving a Framingham and/or Clinical HF diagnosis

Proven Heart Failure Medical Treatments	Percentage Receiving Treatment at the time of Clinical Contact				
	Group A Patients who met Framingham Criteria 6 months prior to clinical diagnosis of HF (n=3168)			Group B Patients who did not meet Framingham Criteria 6 months prior to clinical diagnosis of HF (n=1476)	
	Preceding Framingham diagnosis	After Framingham diagnosis	After clinical diagnosis	Preceding clinical diagnosis	After clinical diagnosis
ACE Inhibitor	29.45%	36.46%	50.32%	35.98%	64.97%
Angiotensin Receptor Blocker	8.40%	10.95%	15.03%	9.49%	19.11%
HF $\beta$ -blockers (carvedilol, metoprolol succinate, or bisoprolol)	37.47%	48.42%	66.51%	48.78%	74.53%
Contra-indicated CCBs (diltiazem or verapamil)	18.40%	23.20%	28.44%	20.87%	34.42%
Loop diuretic	18.81%	29.45%	66.07%	31.44%	73.51%
Digoxin	6.34%	8.43%	15.47%	4.00%	25.14%